Remote Sensing: Opportunities for Nature Biodiversity Maintenance

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Biodiversity

• *Biodiversity, or biological diversity,* is a term that refers to the number of *genes,* species, individual organisms within a given species, and biological *communities* within a defined geographic area, ranging from the smallest ecosystem to the global *biosphere.* (A *biological community* is an interacting group of various species in a common location.)

• Likewise, *biodiversity loss* describes the decline in the number, genetic variability, and variety of species, and the biological communities in a given area. This loss in the variety of life can lead to a breakdown in the functioning of the ecosystem where decline has happened.
Human-Driven Biodiversity Loss

- 2019 report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services noted that up to one million plant and animal species are facing extinction due to human activities.

- Dealing with biodiversity loss is tied directly to the conservation challenges posed by the underlying drivers. Conservation biologists note that these problems could be solved using a mix of public policy and economic solutions assisted by continued monitoring and education.
1) Focusing the field inventory

**Need:** Authorities decisions concerning protection and subventions

**Example:** LiDAR could find potential sites for dead-wood or uneven-aged forests

→ The field work can be rationalized
2) Comprehensive knowledge

**Example:** Threatened natural habitats

- National level obligatory reporting concerning the situation of habitats, every six years
- With remote sensing, we could assess the situation of habitats averagely at the landscape level
- There no need for exactly located information (no authorities decision made)

**Need:** to monitor the trend and changes. The goal is to gain online database as wide area as possible.

(Use is more like policy evaluation)
May requires changes in regulation
3) Support for operative management

**Example:** Leaving retention trees during the cuttings

- Sensors, modelling, data management

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**RUSLE2015 erosion modelling**

Sediment load during the first year of soil preparation:

- 0 – 100 kg/ha/a
- 100 – 200 kg/ha/a
- 200 – 400 kg/ha/a
- 400-800 kg/ha/a
- Over 800 kg/ha/a
Conclusions

"These problems could be solved using a mix of public policy and economic solutions assisted by continued monitoring and education."

Every monitoring method should serve some policy need.

No "nice to know" -information!
Sources

- Biodiversity loss: John P. Rafferty
  https://www.britannica.com/science/biodiversity-loss#ref342673

Thanks to

Kiitos

- ASIAKKAAT – HENKILÖSTÖ – KUMPPANIT – YHTEISKUNTA

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